significantly increase an effective exposed surface area of the frozen fluid.

5. A device according to claim 3 or claim 4 wherein said valve means include a reversing valve operable on said refrigerant feed pipe.

6. A device according to any one of the preceding claims including an electronic expansion valve operable on said refrigerant feed pipe for metering the evaporation of refrigerant gas within said evaporation coil.

7. A device according to any one of the preceding claims, further including at least one sensor within said tank for detecting propagation of an interface between a frozen phase and surrounding liquid phase of the first fluid.

8. A device according to claim 7 including a pair of said sensors for detecting propagation of the interface between respective predetermined maximum and minimum positions in response to progressive freezing of the first fluid.

9. A device according to any one of the preceding claims, further including a temperature sensor on said outlet.

10. A device according to any one of the preceding claims, further including a temperature sensor on said inlet.

11. A device according to any one of the preceding claims, further including a timer adapted to activate said refrigeration unit in off-peak periods.

12. A device according to claim 11 further including a manual override mechanism disposed to permit activation of said refrigeration unit outside of off-peak periods.

13. A device according to any one of the preceding claims, further including an inlet pressure sensor for detecting pressure in said inlet.

14. A device according to any one of the preceding claims, further including an outlet pressure sensor for detecting pressure in said outlet.

15. A device according to any one of claims 7 to 14, further including electronic control means to control the operation of said device in response to predetermined system parameters.

16. A device according to claim 15 wherein said electronic control means include a microprocessor responsive to predetermined system parameters including outputs from said sensors.

17. A device according to any one of the preceding claims, further including agitation means disposed within the tank to agitate and thereby reduce the effective freezing point of said heat exchange fluid.

18. A device according to claim 17 wherein said agitation means includes at least one nozzle within said tank for injecting material into the heat exchange fluid, thereby increasing its flow rate and turbulence.

19. A device according to claim 18, wherein said agitation means include an axially extending perforate tube mounted within the tank, said tube including an array of said nozzles in the form of apertures or perforations axially spaced along its length.

20. A device according to any one of the preceding claims, wherein said coil is configured substantially in the shape of a regular helix.

21. A device according to claim 20, wherein the pitch of said coil is between 5° and around 20°.

22. A device according to claim 20 or claim 21, wherein the pitch of said coil is between 10° and around 15°.

23. A device according to any one of claims 20 to 22, wherein the pitch of said coil is approximately 12°.

24. A device according to any one of the preceding claims, including a pair of said coils disposed generally concentrically within said tank.

25. A device according to claim 23 including three or more of said coils disposed generally concentrically within said tank.

26. A device according to claim 24 or claim 25 wherein the pitch of said coils is substantially identical.

27. A device according to any one of the preceding claims wherein said tank is generally right cylindrical, and generally circular in cross-sectional profile.

28. A device according to any one of the preceding claims wherein said heat exchange fluid has a lower freezing point than said first fluid.

29. A device according to any one of the preceding claims wherein said heat exchange fluid includes ethylene glycol.

30. A method of operating a device as defined in any one of the preceding claims, including the steps of:

directing an evaporative fluid through the evaporator coil so as to reduce the temperature of an outer surface of the coil to a temperature less than or equal to the freezing point of the first fluid,

thereby causing said first fluid to freeze on the outer surface of the evaporator coil,

allowing sufficient time for an interface between solid and liquid phases of the first fluid to advance such that the frozen liquid and the sidewalls together define a substantially helical path; and

directing a heat exchange fluid to flow along said helical path such that the temperature of the heat exchange fluid progressively drops toward the temperature of the frozen first fluid.

31. A method according to claim 30 including the further step of periodically injecting a hot fluid into said coil to crack and create fissures in said frozen fluid and thereby increase the rate of freezing of the first fluid.

32. A method according to claim 31 wherein said hot fluid is injected at a rate and temperature sufficient to fracture discrete blocks from said frozen fluid, and thereby significantly increase the exposed surface area of the frozen fluid.

33. A method according to any one of claims 30 to 32 including the further step of injecting material into the heat exchange fluid to increase its flow rate or turbulence.

34. A method according to any one of claims 30 to 33 including the further step of recovering the heat extracted from said heat exchange fluid for use in other applications.

35. A method according to any one of claims 30 to 34 wherein said heat exchange fluid has a lower freezing point than said first fluid.

36. A method according to any one of claims 30 to 35 wherein said heat exchange fluid includes ethylene glycol.